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Reproductive Processes of Animals*

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Not so many years ago the belief in spontaneous generation was quite general, not as applied to higher beings perhaps, but nevertheless there were many eminent scientists who believed that life could and does originate independent of pre-existing life. There are those today whose training has been less thorough, who firmly believe that horse hairs turn to worms when placed in water, and that live mice originate in bags of grain.

There are some animals whose eggs develop without fertilization; there are many others in which both the male and female reproductive organs are present in the same individual; still lower down in the scale of life there is no such a thing as sex, one individual being like all the others in the same natural group. These forms of reproduction occur in some of the animal parasites with which we have to deal. In all vertebrates, in so far as anyone has been able to demonstrate, union of the male and female elements is essential to the creation of the new being.

These sexual elements, respectively known as the spermatozoon (plural spermatozoa) and the ovum have their origin in the especially constructed glands, the testicles and ovaries. In all physical characteristics they differ greatly, the ovum being a large round non-motile body, containing a considerable quantity of stored up food, the spermato-

*Read at annual meeting Missouri Valley Veterinary Association, Omaha, July, 1911.

zoon a small, slender, actively motile body, drawing its sustenance from the fluid in which it floats.

Spermatozoa are produced within the tubules of the testicles in countless millions. In a section of the testicle of a mature animal, spermatozoa may be seen in all stages of development. A similar section taken from an animal just reaching the age of puberty, shows only here and there a tubule that has begun the production of sperm cells. We would hardly expect to find, therefore, in the semen of a two-year-old colt, the vast numbers of sperm cells that we find in the semen of a mature stallion; nor would we expect him to possess the powers of recuperation of an older horse, since only a portion of the glands have as yet begun to function.

With the spermatozoa there is produced a milky fluid which serves as a nutrient vehicle for conveying the essential cells to their destination. This fluid can easily be procured from the tube of the epididymis or the vas deferens, through which it must pass in its outward course. Even when secured in this way the sperm cells show active movements, especially if treated with a little normal salt solution as a dilutant. Some idea of the numbers of cells present can be had from the fact that in a single cubic millimeter of bovine spermatic fluid I recently found in the neighborhood of 4,000,000 spermatozoa, which would mean 4 billion to the cubic centimeter. It must be borne in mind, however, that this does not represent the number present in semen as it is discharged, for as we shall explain presently, the spermatic fluid is diluted by secretions from other glands during ejaculation.

The many seminiferous tubules of the testicles discharge their secretion into a number of ducts which finally unite to form the single tube of the epididymis. Through this long and tortuous passage the spermatic fluid must find its way into the vas deferens, which is really a continuation of the tube of the epididymis. Just why this passage should be so long is not quite clear, unless it is intended merely as a reservoir. The exact length is rather difficult of determination and I have never found any statements in veterinary literature as to its length in domestic animals. I have on several occasions however, arrived at fairly uniform conclusions as to its length in bovines, in which it is probably about the same as in the horse. This I did by dissecting out a short section and carefully weighing it, after which I weighed the entire epididymis and from this calculated the length of the tube composing it. The approximate length according to these calculations was 200 feet. This is not difficult to believe when we consider that the tube of the human epididymis is said to be twenty feet in length.

Some smooth muscle tissue occurs in and around this structure while in the vas deferens we find a heavy muscular wall. This muscle tissue is without doubt thrown into use during ejaculation, thus emptying more or less completely the entire canal, but expecially the vas deferens, into the urethra. This however is not the only structure which empties

its contents into the urethra during ejaculation. The seminal vesicles at the same time force through the ejaculatory ducts, an albuminous secretion which mingles with the spermatic fluid. Into the same division of the urethra the prostate gland opens by many separate ducts. This gland also is compressed by the contraction of muscular tissue which pervades ist structure and its secretion still further adds to the bulk of the fluid ejaculated. We may say therefore that semen is formed by contributions from three distinct sources, the testicles, seminal vesicles and prostate gland, the product of the two latter glands being apparently intended as the food supply of the spermatozoa, whose activity is by this means kept up for several days. In this connection it is well to call attention to the seminal vesicles and to correct the wrong impression which is apt to be created by their name, namely that they are reservoirs for semen. As a matter of fact these structures are glands, secreting and storing their albuminous product until it is needed. It is of course possible for spermatozoa to be found in these structures, having found their way there from the vas deferens. It is not unusual however to find few, if any, spermatozoa in the seminal vesicles, and their function therefore seems to be secretory rather than that of a repository for spermatic fluid.

The dog has no seminal vesicles, and it has been taught that on this account, ejaculation is delayed, the spermatic fluid having to come from the vas deferens. This explanation was given, however, at a time when the seminal vesicles were considered as reservoirs only. It does not explain why the boar, whose vesicles are enormously developed, requires some time to execute the act.

Cowper's gland, located still further down the urethra, presumably throws off a secretion previous to ejaculation proper, the purpose of which is to prepare the passage for the sensitive spermatozoa which are to follow.

The vitality of a sperm cell under proper conditions is remarkable at the same time depending very largely upon the vigor of the animal from which it comes. They are extremely susceptible to various chemical agents, sunlight, diseased membranes, etc. If properly handled however, spermatozoa may be made to retain their motility for many days outside the body and live still longer if they have entered the healthy uterus. While in the practice of artificial insemination it is advisable to keep semen at or near body temperature, it is an interesting fact that the spermatozoa still exhibit movement after having been kept for several hours on ice. From the brief study which has been made of barrenness in mares, it seems very likely that in a large percentage of such cases there resides within the uterus a host of micro-organisms whose products are destructive to the life of sperm cells in the same way as are numerous chemic agents. This field needs more thorough investigation since the condition of barrenness means millions of dollars in annual losses to the owners of brood mares.

When ejaculation occurs in normal intercourse, the semen is thrown with some force into the genitals of the female. Whether or not it is discharged directly into the mouth of the uterus depends upon several factors. Nature seems to have intended that in the dog, ox, sheep and pig the mouth of the uterus should receive the pointed extremity of the penis and that the semen therefore should be discharged into that organ. In the equine family the conformation of the penis is radically different. The intention here seems to have been for the glans penis, which at this time becomes enormously expanded, to grasp the os uteri, while the teat-like protrusion of the urethral canal effects the discharge into the relaxed opening. It will be readily understood, however, that this relation of the respective organs depends largely upon the relative size of the participating animals, since the angle at which the penis enters the vagina thereby varies greatly.

Breeders who attempt to collect semen from the vagina following a service, often find no semen present, while in other cases the most of the discharge seems to have remained there. It is well understood however, that even though the semen be not thrown directly into the uterus, it may be aspirated there, following its discharge, by the relaxation of the uterus, which during the orgasm is tense and erect. If this does not occur, the sperm cells by their own efforts may migrate over the moist membranes until they have traversed the entire genital tract.

One spermatozoon of the millions discharged is all that is required for the fertilization of an ovum. The meeting occurs ordinarily in the fallopian tube where the developing embryo spends the first few days of its existence, later descending to the uterus to complete the process.

Mammalian ova have a rather interesting life history. They originate in the ovaries by tubular ingrowths of the peritoneal covering, such ingrowths becoming isolated groups of cells within the ovarian stroma. In each such cell-group there appears one or more cells different from the others, which are destined to become ova. Many of these ova mature and are discharged during the life of an animal but a much greater number never mature. It is stated that in woman, 70,000 ova are present in the ovaries of which at best only a few hundred reach maturity.

Development of these ova occurs in what is known as a graafian follicle, which becomes as it grows larger and larger, a vesicle filled with a lymph-like fluid. Coincident with this ripening process, there ordinarily appears the condition of estrum or heat.

Authorities do not agree as to the exact time when discharge of ova from the ovaries takes place; in fact there seems to be a lack of uniformity in this regard in animals of the different species. In rabbits it is said to occur at any time under venereal excitement, while in most of the larger domestic animals ovulation probably does not occur, except rarely, at any other time than during or shortly after the heat period. Examination of the ovaries of animals during estrum usually reveals the graafian follicles greatly distended but not yet ruptured, while

examination soon after heat has passed shows one or more ruptured follicles. It seems quite probable that the force which finally causes the follicles to rupture is the contraction of the smooth muscle tissue which is abundant both in the ovaries and in the broad ligaments. This muscle tissue seems to be thrown into use during the orgasm accompanying intercourse, and if graafian follicle is nearing the ripe stage, rupture is brought about by the increased pressure of such muscular contractions. Rupture occurs, however, with regularity in most animals even though no intercourse is had.

Having been discharged from the follicle wherein it has developed, the ovum must now be directed into the fallopian tube in order that it may finally reach the uterus. It should be remembered that no direct connection between the ovary and its duct exists, but that the ovum bursts forth upon the surface of the ovary just as the pea is extruded from the pod. The ovum must then gain entrance to the open end of the fallopian tube from the peritoneal cavity within which it lies following its discharge. In most animals the tube spreads out into a broad fan-shaped membrane, the surface of which is covered with furrows leading toward the opening. It has been generally supposed that in some manner this fimbriated extremity is formed into a funnel, enclosing the ovary and that the egg cell is thereby directed by it and the ciliated epithelium which covers it, into the mouth of the tube. Failing in this the ovum is left to float in the peritoneal cavity until it finally dies or perchance becomes fertilized and develops outside the uterus.

In the bitch the possibility of extra-uterine pregnancy is greatly reduced from the fact that instead of a fimbriated termination, the fallopian tube ends in a bursa or sac which encloses the ovary.

Some interesting results have been obtained by removing the ovary on one side and the fallopian tube on the opposite side. Such an operation, according to the usually accepted idea, would render conception impossible. Practice shows however that even under these conditions conception does occur, the only possible explanation being that the discharged ovum wanders about in the peritoneal cavity until it is finally drawn by some unknown attraction into the tube of the opposite side. Probably even with the tube on its own side intact, the ovum may occasionally pass to the uterus through the other tube.

Plural births such as are normal for the bitch and sow, come through the discharge of several ova during the same heat period. The same thing occurs occasionally in the mare and cow. Twins may develop, however, as the result of one ovum being fertilized by one spermatozoon, the resulting embryo subsequently dividing into two equal cell masses, each one of which develops into a complete body. Such twins are always of the same sex, resemble each other very closely and occupy the same fetal sac. They are known as homologous or identical twins to distinguish them from those which develop from separate eggs. If such fission is incomplete, some form of double monster is the result.

Occasionally in mares and frequently in bitches, the young delivered at one birth are not all the progeny of one sire, the ova having been fertilized from spermatozoa coming from two or more males. This is known as superfecundation. A still rarer condition is known as superfetation, and consists of the fertilization of ova discharged at different heat periods, sometimes as much as several weeks apart. In this way a mare may deliver one mature and one immature foal, the one a mule, the other a horse.

When the twin offsprings of bovines are of opposite sex, the female is nearly always barren and is known as a freemartin. The immediate cause of the barrenness is found in the imperfect development of the internal genitals, but there is no known reason why they should be imperfect or why the bovine should be alone in showing such imperfection.

Hybrids are usually incapable of performing fruitful intercourse because the sexual elements are either not produced at all or are imperfect in form. Excessively fat animals are often sterile the cause of which is thought to be either the occlusion of the genital passage with fat or a fatty degeneration of some of the organs concerned.

The factors which are concerned in the determination of the sex of the offspring are rather obscure. At least seven distinct theories have been advanced but none are very reliable. The theory that the ova and spermatozoa are themselves sexual and that in their union they decide the sex of the offspring is perhaps the best supported of all. Unfortunately however we have no way of controlling such unions, hence are powerless to either prove our theory or to control the ratio of the sexes.

For some unexplained reason the influence of previous pregnancy may be transmitted to the young of subsequent pregnancies.* For example, a mare which has delivered a mule colt one season may the next season deliver a foal sired by a stallion, yet showing unmistakable mule characteristics. The most plausible explanation of this phenomena is that the blood of the mother imbibes some element from the fetus *in utero*, which she retains until the next pregnancy occurs, when it affects the growth of the second fetus. The danger of such transmission renders it advisable to keep well bred animals away from danger of impregnation by males of other breeds.

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C. B. MILLER, M. D. C.

Manning, Iowa.

Enclosed find $1.00. Raise the ante all you want to, but deal me a hand every month. "Got to have it."

N. M. THOMPSON.

Red Bluff, Cal.

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*This statement is denied by some competent authorities and questioned by many.—ED.

Bacterins in Veterinary Practice*

By J. P. SPOON, M. Sc., D. V. S., Burlington, North Carolina

It is not with the intention of presenting anything especially new concerning the uses of bacterins in veterinary practice that I am presenting this paper, but with the hopes that some fellow practitioner may more fully realize the value and usefulness of bacterins in treating many conditions that do not readily respond to other treatment.

There are few, if any, branches of science that have attracted more interest from medical men within the last few years than has the production and application of bacterins, the use of which was first brought to the attention of the veterinarians in 1908 by Dr. A. T. Kinsley of Kansas City.

One of the many ways by which the body protects itself against bacterial invasion is through the agency of phagocytes and opsonins; this is especially true of suppurative conditions. Opsonins are substances in the blood that act upon the bacteria invading the body, rendering them more susceptible to the action of the leukocytes. They are distinct from toxins, antitoxins, etc., that are found in some serums. The origin of opsonins is not definitely known, though they are probably produced in the muscles or the subcutaneous tissue of the animal body. They are easily destroyed by heat.

Opsonins are specific substances, there being a different one for the various pathogenic bacteria which may be present in any animal body. Therefore, in preparing a bacterin for a given condition, it must contain organisms of the same species as those it is desired to combat. For example, a bacterin prepared from staphylococcus pyogenes albus and introduced into the animal body will cause that animal body to produce opsonins which act on the living staphylococcus pyogenes albus, rendering them more susceptible to the action of leukocytes.

A bacterin is a biological product, the essential ingredient of which is dead and disintegrated bacteria. Bacterins are of two principal kinds, viz., poly-bacterins and autogenous bacterins. Poly-bacterins contain two or more species of bacteria and are the ones most used by veterinarians because they are easily secured and give apparently as good results in most cases as the autogenous variety.

Poly-bacterins must be made in a laboratory equipped for such work. Few veterinarians have such equipment, hence only a general description of the technic of preparation will be given here. The organisms are grown, at body temperature, in a liquid media, for a given length of time, this being governed by the number of organisms wanted in the bacterin. At the end of the given period of growth, the

*Presented at the annual meeting of the North Carolina State Veterinary Medical Association Raleigh, July, 1911.

organisms are killed, by placing the flask containing them at a temperature of 60° C. for one hour in a steam sterilizer [or by the addition of chemicals], after which they are cooled and preserved in a normal saline solution with phenol.

Poly-bacterins are indicated in all suppurative conditions. Many conditions are cured without surgical interference if the case be treated in the early stages with poly-bacterins. If the necrotic tissue is not too extensive, it may be removed by the leukocytes. However, if this diseased area is extensive, all necrotic tissue should be removed surgically and at the same time good drainage provided. Follow this with an injection of poly-bacterin every three or four days.

Dr. Brown of Kansas City states that he has, on a series of over fifty horses bought by one company, produced sufficient resistance to acclimation fever by the simultaneous injection of one dose each of poly-bacterin and the strepto-bacterin, repeating the dose on the third day, that only two or three of the horses missed even a single day's work.

Other conditions responding to bacterin treatment are colt-distemper or strangles, fistulous withers, poll-evil, quittors, wire-cuts, nail-punctures and all other kinds of wounds. Recent wounds should be thoroughly cleansed, given good drainage and an injection of poly-bacterin every three or four days. Do not use any liquids in the wound after the first thorough cleansing. Experience in many cases has shown that the best results are obtained from bacterin treatment where the wounds are kept as dry as possible.

The application of autogenous bacterins is based upon the same principles as the poly-bacterins, though their preparation is somewhat different. They can more readily be made by the practitioner, though we do not advise this procedure, since the poly-bacterins give about as good results and are easier and quicker procured.

McCampbell and Phillips of Ohio State University recommend the following technic in the preparation of autogenous bacterins. Clean the field of infection thoroughly with weak bichloride of mercury solution, alcohol, and ether. Express the first pus from the inflammatory tract in order to exclude accidental saprophytic bacteria, and with sterile platinum needle make a bacterial culture on several slant agar tubes from the deep pus. These cultures presumably contain all the bacteria concerned in the infection. After the tubes are inoculated, they are incubated at 37° C. for twenty-four hours. They are then washed off carefully with .85 percent sodium chloride solution, shaken to destroy clumps of bacteria and heated in a water bath at 60° C. for one hour to kill the bacteria. The bacterial emulsion thus heated is now approximately standardized by dilution with .85 percent sodium chloride solution to the opacity of the precipitate in the fluid in a test tube containing one percent sulphuric acid in distilled water and five percent barium chloride in distilled water. One tube of this kind can be prepared, corked and kept for all time. The number of bacteria

in such an emulsion must, of course, vary, but there are approximately 5,000,000 dead germs per cubic centimeter.

This must now be injected with a sterile syringe, the size of dose being governed by size of the animal. For example, the initial dose for a case of fistulous withers in a grown horse should be about one cubic centimeter. Repeat every four or five days, slightly increasing the dose at each injection. Numerous cases have been reported to recover from this treatment.

I have seen excellent results from use of bacterins in the treatment of a pointer bitch that was brought to the hospital with the left fore leg slightly swollen and showing extreme lameness. Three days later a large abscess formed under the left shoulder. When this abscess was opened about two ounces of pus escaped. Having had no experience with bacterins in canine practice we gave only one-fourth of a cubic centimeter for the first dose. Two days later another abscess formed on the external side of the elbow from which we got about one ounce of pus. Four days later we got a similar quantity from an abscess at the point of the elbow, and gave one-fourth of a cubic centimeter of bacterin. Five days later the discharge of pus was decreasing. Gave another quarter of a cubic centimeter of bacterin and repeated the dose four days later. Two days later all the discharge from the wounds had ceased and all were completely healed in a few days.

The following are other cases treated with poly-bacterin.

Case 1.—Bay mare, ten years old. Had a fistula of the withers of about three years' standing. Treated by Drs. Stewart & Bates about six months. Apparently made complete recovery. One year later the neck swelled considerably and was very sensitive. The mare could not get her head to ground. An abscess was discharging all over shoulder. Gave dose of bacterin. Four days later gave another dose and followed this with a third dose one week later. Discharge decreased rapidly from first injection and made rapid and complete recovery without any other treatment.

Case 2.—Roan mule three years old. Lanced withers and got large quantity of necrotic tissue and small quantity of pus. Gave a dose of bacterin and repeated five days later. Complete recovery without further treatment.

Case 3.—Gray mare. When she came to hospital this patient had a large semisolid swelling on side of withers. Hygroma treatment was applied, which reduced the enlargement somewhat. However, the desired results were not obtained, and the place was opened and a very small amount of pus was obtained. We gave a dose of poly-bacterin and repeated the dose five days later. The third day following we found a large pus-discharging center about six inches below point of withers. Opened on right side to give free drainage. We gave a dose of bacterins about every ten days. Recovered after four doses were given.

Case 4.—Fistulous withers. Bay mare, six years old. Brought to hospital June first for operation. Got about one pint pus, a piece of the spinous process of one of the dorsal vertebra and some necrotic ligamentum nuchæ. Large fistulous tract extended down between the scapulae. We removed all the necrotic tissue and packed the wound with five percent formalin solution and gave a dose of poly-bacterin. Three days later temperature began to rise, the highest being 103.4° F. We continued to cleanse and repack wound until June 10, when patient died of septicemia, resulting from lack of proper drainage.

Case 5.—Bay gelding. Nail prick in chest wall postero-internal to elbow. Considerable swelling resulted. When opened about one quart of pus and serous fluid escaped. We thoroughly cleansed this wound with dioxygen and gave three doses of poly-bacterin. Complete recovery followed in about three weeks after injury was made.

Case 6.—Bay mare kicked by horse. Large flesh wound made just over left ischial tuberosity. Cleansed wound and made counter opening for drainage. Gave three doses poly-bacterin. Complete recovery in few days.

Advance of Veterinary Science

By CLIFF ACKLEY, K. C. V. C., '12, Kansas City, Missouri

That the science of veterinary medicine and surgery is making continual and rapid progress, is fairly well known to every student and practitioner, yet few, I believe, realize the vast achievement in this direction during the last half-century.

The study of therapeutics, formerly based on empirical and superstitious lines, has reached an advanced stage, in which alkaloids, with actions that are at least partially understood, have replaced the bulky and cumbersome ancient methods of dispensation. Infectious diseases are now largely treated with vaccines, antitoxins, bacterins, etc., and it is probable that the not far distant future will see every infectious disease with its known specific antidote of biologic origin.

The progress of veterinary medicine was brought forcibly to my attention by the perusal of a book on veterinary science, if we may stretch the word science to include such a work, issued in 1841, at Chambersburg, Pennsylvania.

The authorship of this book, "The Citizen's and Countryman's Experienced Farrier", is given on the title page as "Markham G. Jefferies and Experienced Indians." Judging from this book, printed less than three-quarters of a century ago, the amount of superstition which entered into practice at that time is surprising—astounding.

Many of the recipes given, however, although at that time evidently based upon empirical knowledge, are yet largely followed with the

difference that we now claim to have a scientific basis for such treatment. For instance, among several treatments offered for ring bone, there is the boring of holes in the affected region, to be filled with "white mercury" or powdered arsenic. The actual cautery is also suggested.

For a shoulder strain a recipe is given as follows:

Take a pint of the best aqua vitæ; of oil bays, oil of swallows and black soap, each half a pint; work all these together until they come to a thin ointment; then take camomile, red sage, rue and messaldine, of each a handful, dry them and rub them to a fine powder, mix them with the ointment and bring all to a gentle salve.

What modern prescription, even of the most pronounced "shot-gun" type, could call for the elaborate preparation of this comparatively simple salve? Taken to a modern druggist it would probably give the prescriber a reputation for insanity. But, as it was further advised to apply the mixture hot, with much friction, doubtless the results were fairly satisfactory.

Perhaps the most amusing treatment offered was as follows:

If your beast has the sweiny, rise the first Friday in the new moon, and perform this cure speechless before sunrise; take a sharp knife and cut a small bit of skin from the affected part, so that it may bleed, and put the skin with the blood into a small blank paper, then with an auger bore a hole on the east side into an apple tree, put in the paper with some blood and drive a pin upon it in three strokes; this you will find to be the most certain cure. *Proved.*

Perhaps the irritation and subsequent infection may have been of some benefit, but the "hocus-pocus" accompanying it is very amusing to the modern veterinarian.

Many names, given to various diseased conditions, now long forgotten, are included in the list. Among these we find: "Strangullion," a disease of the urinary tract; "vives," "water farcion," "mallender," "mourning of the chine," "surfeit," "lax," (dysentery), "loss of cud," and many others.

Among the many quaint diseases prescribed for we find:

OF THE RAGE OF LOVE IN MARES

It is reported by some of our English farriers, that mares, being proud of high keeping, in the spring of the year, when their blood begins to wax warm, when they go to the water, will, on seeing their own shadows therein, presently fall in love therewith, and from that love get into such a hot rage, that they will forget to eat or drink, and never cease running about the pasture, gazing strangely, and looking about and behind them. The cure for this folly is, presently to lead the mare to the water, there let her see herself as before, and the second sight will utterly extinguish the memory of the first, and so take away her folly."

Dog's grease, cow and human dung, soot, red-herrings, bacon, verdigris, (spelled verdigrease), weasel's skin and many drugs whose names have been long forgotten are among the remedies offered for various ailments.

One can but wonder if, seventy-five years hence, the veterinarians of that day will read our text books with as much amusement as is now afforded us by reading of the works of our predecessors, the practitioners of yesteryear.

Enclosed please find a two dollar bill to extend my subscription for 2 years. THE JOURNAL is a dandy, and I would not be without it or miss a number.

Bellefonte, Pa. S. M. NISSLEY, M. D. V.

Importance of Pathology to the Practitioner*

By T. N. SPENCER, B. S., D. V. S., Concord, North Carolina

By the term pathology we understand the science which treats of disease, and disease signifies any abnormalities in structure or function. There has been great advancement made during the last few years in our understanding of disease and there is yet much to be learned.

The advance made in the study of hematology appeals to me as being one of the greatest achievements of the present day, because it was the result of this study that the causative factor of many diseases was discovered, and it also aided in the discovery of antitoxins, precipitins, agglutinins, toxins, opsonins, etc., which in turn brought about the manufacture of various serums, bacterins, antitoxins, etc., which of themselves constitute a new era in the treatment of disease.

Blood passes to every tissue in the body, and any pathological change in any tissue will be manifested by certain change in the blood, and these changes are confined largely to the white blood cells of which there are several kinds, each seemingly having some definite function to perform.

For instance if upon microscopic examination we find an increase in the number of polymorpho-nuclear leucocytes, which appear as large cells with large indefinite-shaped nuclei, we may know that inflammation is present in some tissue, unless it be a physiologic process as in pregnancy, during digestion, or after severe exercise.

If we find a lymphocytosis we may rest assured that there is a disturbance in the lymphoid tissue such as occurs in leukemia, lymphoma or tuberculosis.

The lymphocytes are differentiated from other white blood cells by the large nucleus that almost entirely fills the cell. An increase in eosinophiles is indicative of parasitism. The eosinophiles contain one large nucleus which stains dark and numerous granular nuclei which stain red. So it is as we learn more of the blood and its pathological variations, we are by blood examination able to make many a diagnosis that would be otherwise impossible.

It was not until comparatively recently that we understood the significance of inflammation, but now we know it to be a reaction of the tissue to some irritant and must occur in order that repair may be brought about. After a review of the phenomena of inflammation we will see why repair without it would be a slow process if not altogether impossible.

1. There occurs certain vascular changes which consist of an increase in the blood supply to the affected area.

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*Read at meeting of the North Carolina State Veterinary Medical Association.

2. The exudate passes out of the vessel. This not only dilutes the irritant and adds nutrition to the parts but it carries with it substances such as leucocytes, bactericidal substances, opsonins, etc., to guard against, combat, or destroy infection.

3. We find the battle raging, so to speak, because it is here that chemotaxis and phagocytosis takes place and if the body has sufficient resistance it will be victorious. Thus we have learned that in the treatment of all inflammations the first thing to be done is to increase the body's resistance and this we are able to do by injecting into the body substances which will in turn stimulate the secretion of substances by the body to cause it to have a greater power of resistance.

This protective substance, secreted by the muscle, cells, is called opsonin. It stimulates the leucocytes and also enfeebles the bacteria rendering them and more easily digested by the leucocytes.

Some bacteria, as the pus-producing bacteria, are found to contain substances which will cause the body to secrete an increased amount of opsonins. This substance is called endotoxin and is not liberated until the bacteria are dead, thus we are provided with bacterin which is proving very satisfactory not only in the treatment of suppurative conditions but in all pathological conditions where the body needs greater resisting power, which is the case in nearly all diseases.

We can here see in this the virtue in osteopathy because the contraction and expansion of the muscles induced by the osteopath, stimulates the secretion of opsonins, thereby raising the opsonic index of the body, which, we are forced to admit, gives very successful results in the treatment of some diseases.

To review in brief the pathology of a few of the important diseases let us consider first tuberculosis.

In tuberculosis, as in other diseases, if the animal is possessed of a great resisting power the lesion will be encapsulated by a fibrous wall and the animal will not suffer sufficiently to manifest any symptoms; but if the animal's resistance is low and the germs virulent the symptoms will develop rapidly and the lesions appear in various parts of the body, thereby establishing a generalized case in a comparatively short period.

In actinomycosis we find that the manner of spread is different than in tuberculosis. The ray fungus is possessed of enlargements or clubs on the distal extremity which upon becoming detached have the power to penetrate the capsule and start new centers of infection. This explains the multilocular appearance of the actinomycotic lesion.

Hog cholera is demanding much attention at present and much discussion has arisen lately about whether or not hog cholera and swine plague are separate and distinct diseases. Personally I believe them to be caused by the same organism except that in the so-called swine plague the infection is probably inhaled, as the lesions are chiefly confined to the lungs. However, this must be further investigated before a definite decision can be reached.

The pathology of parturient paresis offers an abundance of room for study because the various theories thus far advanced as to the cause of the disease have never very satisfactorily explained the condition. The theory that it is due to a disturbance of the circulation does not explain the condition satisfactorily because the symptoms are not that of a circulatory disturbance and drugs acting upon the circulatory system are of no value in this disease. The intoxication theory does not explain why we get good results from mammary inflation. The theory of infection has never been proven and if an infection is present, why is there no rise in temperature? The lymphatic theory does not explain why there is no inflammation because we know an engorgement of the lymphatics will rapidly bring about inflammation.

Rabies is a disease in which no definite macroscopic lesions can be found except that the brain generally has a dark appearance and occasionally a bloody spot can be seen under the coverings of the cord, but microscopically the negri bodies are generally found, in the nerve cells of the brain. These bodies are now thought to be protozoon in nature and are probably the causative factor in the disease; however, a failure to find them does not certainly signify that rabies is not present but when found they are diagnostic.

Tetanus is another disease in which no pathological lesions have as yet been discovered, but it is interesting to note the great affinity for nerve tissue that the toxin of the bacillus of tetanus possesses, and the theory of the antitoxic treatment is that the antitoxin has more affinity for the toxin than has the nerve tissue, and that it therefore combines with the antitoxin and is rendered harmless.

Glanders offers nothing new in regard to lesions but much attention is now being given to the Konew precipitation test for the diagnosis of this malady. If this test proves satisfactory it will be a great improvement over the other tests because by this method the practitioner is able to make a diagnosis in the field in a very short time.

The test in brief consists of drawing a small quantity of blood from the suspected animal and mixing with the serum of this blood a substance called mallease. The reaction consists in the formation of a cloudy ring at the junction of the serum and mallease.

The mallease is made by growing the bacillus mallei two days on glycerine agar, adding eight percent solution of antiformin. This is filtered through a Berkfeld filter and neutralized with a five percent solution of sulphuric acid.

So much yet remains to be learned about the science of disease, that it is encumbent upon each of us do all he can to aid in the advancement in pathology.

VETERINARY MEDICINE is very instructive and I do not know how I could get along without it.

IRA C. BROWN, D. V. S.

Afton, Iowa.

AMERICAN JOURNAL OF
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Support, Actively, Army Legislation

Resolutions passed unanimously by the Illinois State Veterinary Medical Association at its twenty-seventh annual meeting in Chicago, December 7th, 1911:

RESOLVED THAT: We, the members of the Illinois State Veterinary Medical Association, assembled in our Twenty-seventh Annual Convention in Chicago, this seventh day of December, 1911, do express our deep sympathy with the movement to secure commissions for veterinarians in the United States Army, and pledge ourselves, individually and collectively, to support the plan to secure such commissions for our brothers of the veterinary profession in the Cavalry and Artillery Corps, the Subsistence and Quartermasters Departments, United States Army, by means of a bill to be enacted by Congress in its present session, namely House Bill 16843.

BE IT FURTHER RESOLVED: That the secretary be, and hereby is, instructed:

1. To send a copy of these resolutions to each state, city or other local veterinary association in the United States, inviting them to co-operate in the movement mentioned.

2. To send a copy of these resolutions and a letter to each senator and representative to Congress from the State of Illinois, inviting his support of the bill to commission veterinarians in the United States Army, called House Bill 16843.

3. To send a copy of these resolutions to each member on the roster of the Illinois State Veterinary Medical Association, together with a letter or other literature, explaining fully the necessity for commissioning veterinarians in the United States Army and the gross injustice being done them under present conditions.

The Illinois Veterinary Association, the Chicago Veterinary Society, the Missouri Valley Veterinary Association and many other associations

have done all that they can to increase the probabilities of favorable army legislation at this session of Congress. It remains for us to act as individuals, and this we should and *must* do if we are loyal to our profession.

No objectionable features are contained in House Bill 16843; all its provisions are carefully safeguarded for the public good. It provides for but simple justice to that long-suffering branch of the profession—the army veterinarians. Write your senators and your representatives in the lower branch of Congress urging favorable action upon it. If every reader of VETERINARY MEDICINE will do this the bill will unquestionably become a law—if none of them do it the bill will probably, as similar bills have so often done before, die in the committee. It is up to you—prepare to accept your share of the responsibility for its passage or failure.

A Correction: A Policy

Through one of those curious oversights difficult to explain the signature of Dr. M. H. Reynolds of the University of Minnesota was omitted at the close of his article on page twenty of our January issue. Through the comment on this article all must have been informed of its authorship, but omitting the signature was an error just the same.

We think this discussion of the Nominations Committee of the A. V. M. A. may now close. Numerous recent communications on the subject, to our mind, offer nothing new. At a later date it may be desirable to give a summary of the opinions pro and con of various writers, but for the present at least the discussion is closed.

A Commendation and Endorsement for Dr. Nesom

EDITOR THE AMERICAN JOURNAL OF VETERINARY MEDICINE:

Referring in your editorial note regarding veterinary matters in the Philippines, I did not mean in my report as published on page 817 of your November journal to cast the least reflection upon the splendid work that Dr. Nesom has done in those islands. Dr. Nesom deserves the greatest credit that can be given. He has accomplished excellent results in spite of many disheartening obstacles and without an organization except what he has been able to build up himself. Fortunately his ability has placed him in a position where he can accomplish things, for he knows what should be done and how to do it, but it took him nearly ten years to get things started. What is being accomplished in the Philippines, in spite of our woeful lack of an efficient army veterinary service, is owing to the splendid ability and energy of Dr. Nesom.

N. S. MAYO.

Blacksburg, Va.

Book Reviews

Dorland's American Illustrated Medical Dictionary. A new and complete dictionary of terms used in medicine, surgery, dentistry, pharmacy, chemistry, veterinary medicine, nursing, biology, and kindred branches; with new and elaborate tables of arteries, muscles, nerves, veins, etc.; of bacilli, bacteria, diplococci, micrococci, streptococci, ptomains, and leucomains, of weights and measures, eponymic tables of diseases, operations, signs and symptoms, stains, tests, methods of treatment, etc. Sixth revised edition. Edited by W. A. Newman Dorland, A. M., M. D. Large octavo of 986 pages, with 323 illustrations, *119 in colors*. Containing over 7,000 more terms than the previous edition. Philadelphia and London: W. B. Saunders Company. 1911. Flexible leather, $4.50 net; thumb indexed, $5.00 net.

This is not just a revision but virtually a new work the excellence of which must be seen to be appreciated. Typographically, mechanically—the work is near perfection; its contents—I can not better describe than to quote the review of a noted medical librarian:

That a dictionary should reach a sixth edition within eleven years, as also being revised five times, tells the story of appreciation by the profession as well as of the unremitting diligence, on the part of the compiler, to keep his work fully up to the increasing demands of the times.

Dr. Dorland possesses in unusual degree the qualities required for the task of preparing a dictionary. He is an accurate, logical thinker, capable as few are of expressing an idea clearly in brief terms. This writer's acquaintance with Prof. Dorland dates back a quarter of a century. Even at that time he noticed the man's remarkable ability, in that he could take a lengthy magazine article of, say, twenty pages and present the gist of the matter in twenty lines.

A dictionary is a necessity to every physician. You cannot pick up any progressive medical journal of the day without meeting new terms the meaning of which you must comprehend in order to understand the article. Dr. Dorland seems to have realized this need in a remarkable manner, and one would think that he must have gleaned from the world-wide medical literature all the newly introduced terms up to the day that his dictionary went to press. One of the latest designations occurring to us just now is the word hormone. We turn to his dictionary, and sure enough, there it is! As a matter of course, we find the word opsonin here, and in addition to that fifteen derivatives, namely, opsogen, opsonification, opsonize, opsonified, opsonology, opsonometry, opsonophilia, opsonophoric, etc. We look for Ehrlich's Theory, and find not only this, but forty-six other "theories" described. The enumeration of nerves, tests, muscles—one wonders why one could not take this book and prepare for the state-board examination. Certainly, if such examination involves the refreshing of the memory on old matters that once were familiar and brushing up on the newer terms in medicine and the ideas back of them, it is difficult to see what more one would need.

The faithfulness of this work to veterinary terms may be judged from its description on page three. This feature is new with this edition.

Another new and valuable feature of this edition is its capitalization. So many medical terms are derived from the names of persons, that one is often at a loss to know whether or not to capitalize them. A glance at this dictionary decides every case, since the initial letters of only proper nouns are capitalized in the vocabulary. In editing the first article in this issue of VETERINARY MEDICINE the question arose as to whether "fallopian" should begin with a capital. Obviously it is derived from a proper noun (Fallipio, an Italian anatomist), but it has been used as at present for 350 years. Should it be capitalized? I

spent an hour's time consulting half a dozen textbooks, the international dictionary and a medical dictionary and was still undecided. My new Dorland had just arrived and the first glance at it settled the question.

A Manual of Poisonous Plants. Chiefly of Eastern North America, with Brief Notes on Economic and Medicinal Plants, and Numerous Illustrations. By L. H. Pammel, Ph. D., Professor of Botany, Iowa State College Agriculture and Mechanic Arts. Part 2. 977 pages inclusive. Size 7 x 9¼ inches. Cloth. Price $5.00 net. (Part 1, $2.50. Complete works $7.50.) The Torch Press, Publishers, Cedar Rapids, Iowa.

Something more than a year ago part I of this remarkable work was reviewed in these pages, and the prediction made that the book would find much favor with veterinarians. This prediction has been more than justified by the reception of Volume 1, which has at once been accepted as authority on this important subject and indispensable to veterinarians.

From year to year the number of reported cases of forage poisoning among animals largely increases, not because more of these cases actually occur, but because veterinarians are coming to recognize them better.

A study of Prof. Pammel's Manual of Poisonous Plants reveals an astonishingly long list of plants that may under some conditions produce poisoning when eaten by animals. The work is a voluminous one of more than a thousand pages. Except for a number of bulletins issued by various experiment stations and others, incomplete even in their restricted field, this is the only work of its kind, and the author seems to have realized his responsibility and to have made the work complete in every detail.

With infinite pains the author describes the various smuts, molds, and other fungi that under certain conditions may grow upon corn, hay, silage, or other provender of animals and occasion poisoning when eaten. The locations where toxic fungi grow, the conditions under which they thrive, the means of detecting and avoiding them are so plainly given that no veterinarian can be caught off his guard in outbreaks of forage poisoning if he uses this work as a guide in his investigations. Many illustrations of poisonous fungi are given.

Of the higher plants that are poisonous a complete list is given. Each plant is described in detail, and the important ones are illustrated by drawings so that they may be readily recognized. The distribution of the various poisonous plants is given and the reason of their toxicity. A table of symptoms of poisoning is also given, from which the veterinarian can with some degree of accuracy determine the plant that has produced the poisoning.

The table giving the habitat of the various plants that may produce poisoning in animals as well as the table giving the various common names of poisonous plants with a reference to their botanical names and their description will be found useful.

A Textbook of **Medical Chemistry and Toxicology.** By James W. Holland, A. M., M. D., Professor of Medical Chemistry and Toxicology, Jefferson Medical College, Philadelphia. Third Revised Edition. Octavo of 655 pages, fully illustrated. Philadelphia and London: W. B. Saunders Company, 1911. Cloth, $3.00 net.

The tendency of students and some practitioners likewise to look upon chemistry as something impractical for their work, and to be studied by the former only when a "test" was thought to be forthcoming, and referred to by the latter only when a change of location makes a state-board examination imperative, is perhaps in large part responsible for the grotesquely incompatible mixtures that are sometimes assayed by these men, for the failure to get results from certain disinfectants under conditions where even a small knowledge of chemistry would have avoided their use, for the external application of "colorless iodine," for a mistaken diagnosis which the most elementary examination of the milk, blood or urine would have corrected, and many other equally disadvantageous occurrences.

Great progress has been made in chemotherapy during very recent years and a great deal more is promised as a result of work now well under way; the success of trypanblue in the treatment of piroplasmosis, the effectiveness of "scarlet-red" in bringing about healing in indolent ulcers and the studies of Ehrlich in the development of his famous "606" give us but glimpses of vast possibilities in the line of systemic sterilization, and cell stimulation by chemic means, possibilities for treatment which are scarcely limited. To use these treatments in any but an empiric way presupposes at least a basic knowledge of their chemistry.

In this work the author wisely assumes the student to possess little knowledge of chemistry or physics in general or of medical chemistry and toxicology in particular, and begins at the very foundation of the subject, treating briefly yet concisely and in sufficient detail for the purpose, matter, force, meteorology, heat, magnetism, electricity and light. After this introduction to the subject inorganic chemistry is taken up and discussed in much greater detail, occupying altogether more than 300 pages. Following the sections on organic, physiologic and clinical chemistry are as fully discussed.

The toxicology is particularly thorough in its treatment of the subject, the symptoms and the antidotes of poisons being fully given. The methods given for the examination of the milk, blood and urine, particularly the latter, are very workable and at the same time easily comprehended. The work is profusely illustrated and contains many colored plates showing chemical reactions. The chemistry of biologic products and of immunity is touched upon, and in short the whole subject, from physics to clinical chemistry, is so naturally and logically developed from step to step through the successive stages, as to render this often abstruse subject at once readily comprehensible and absorbingly interesting.

Recent Publications

Condimental Stock Foods and Tonics. Bulletin No. 87, and **Influence of Stock Foods on the Digestibility of a Corn Ration Fed to Swine,** Bulletin No. 113, Iowa Agricultural Experiment Station, Ames, Iowa. "Great American Frauds" have been discovered about as plentifully as natural wonders, but unless the list of great frauds be a very limited one the stock food industry of this country is certainly entitled to be included. The number of stock foods marketed in this country is enormous, yet few have any but a local sale. The manufacturers of practically every stock food claim that it will increase the gain of animals to which it is fed, will shorten the period required for fattening, increase the flow of milk, prevent and cure practically every disease to which animal flesh is heir.

Careful experiments to determine the value of stock foods at the Iowa Experiment Station like similar experiments at a considerable number of the other Agricultural Experiment Stations have revealed in every case that there is no basis for the claims made by the manufacturers. The basis of practically all stock foods is such inexpensive articles as tan bark, saw-dust, corn meal and flaxseed meal. The proportion of medicinal ingredients is in every case small, and the amount received by any animal with the stock food is too insignificant to have any effect either beneficially or otherwise. The medicinal ingredients are ordinarily aniseed, gentian, common salt, charcoal, fenugreek and usually some sulphur.

None of the stock foods were found which increase the gain from the feed given to animals or increase the flow of milk, while they all invariably largely increased the cost at which gains were secured by reason of their high price. These bulletins are important publications which every veterinarian should possess for reference.

The Spontaneous Oxidation of Arsenical Dipping Fluids, Bureau of Animal Industry, Circular No. 182, and **Directions for Constructing a Vat and Dipping Cattle to Destroy Ticks,** Bureau of Animal Industry, Circular No. 183. These circulars, contents of both of which are plainly indicated by the titles, will be found of interest and value to all veterinarians having to deal with external parasites on the larger animals.

Tuberculosis. U. S. Department of Agriculture, Farmer's Bulletin, No. 473. This is a reprint in bulletin form of the report of the International Commission of The American Veterinary Medical Association on the control of Bovine tuberculosis. It is the best available text on the subject and has been extensively noticed in these pages heretofore.

The World's Work In Veterinary Science

A Digest of all the Current Literature of Comparative Medicine

By DR. L. W. FETZER
Washington, D. C.

SERUM vaccination against erysipelas in hogs, by A. Van der Heyden. (Ann. Méd. Vét., 1910, Vol. 59, No. 11, pp. 689–691).—The author here discusses the advantages and disadvantages in the use of Lorenz's vaccine.

HEMA-AGGLUTINATION, by H. Raubitschek (Ztschr. Immunitätsf. u. Expt. Ther., II, Ref., 1910, Vol. 2, No. 11, pp. 181–200).—A retrospect and critical discussion of practically all the work, embracing 239 titles done in this regard.

IN REGARD to tuberculosis in the dog, by E. Schrum (Über Hundetuberkulose. Inaug. Diss., Univ. Bern, 1910, p. 62).—This is a report in reference to eight well-fed dogs which were infected by feeding with the bovine or human type of bacillus. In all cases tuberculosis was produced.

BERIBERI and white rice; an experiment with parrots, by L. G. Fink (Jour. Trop. Med. and Hyg. [London], 1910, Vol. 13, No. 16, pp. 241, 242).—Beriberi or polyneuritis was produced experimentally by feeding five parrots with white rice which had the external phosphorus-containing parts of the kernel or berry removed.

IN REGARD to the bactericidal substances in the blood plates, by F. W. Werbitzki (In München. Med. Wchnschr., 1911, Vol. 58, No. 17, p. 914).—The blood plates of the dog, bovine, sheep, pig, and human contain no anthracidal substances, while those of the horse, rat, and rabbit do. When present they are different in nature from the bactericides found in leucocytes or the blood serum.

A METASTATIC abscess in the orbit of a foal, following strangles, by Humann (München. Tierärztl. Wchnschr., 1911, Vol. 55, No. 2, pp. 25, 26).—A one-year-old foal which was convalescing from strangles was suddenly seized with epileptiform convulsions which had a duration of

five to eight minutes and which ended with copious sweating and falling to the ground. After this followed dyspneic symptoms accompanied by movements of the limbs, which continued until complete exhaustion set in.

On examination, the left eye of the animal was found to be very sensitive, and after a few days gave indications of pus. Ice was applied to the head, but had to be discontinued, as with the slightest handling the animal went through the cycle of symptoms described above. After some weeks the animal began to eat, and at the writing was again in first class shape.

PYOMETRITIS in the horse, by Schuh (Monatschrift für Prakt. Tierheilkunde, 1910, Vol. 21, p. 289).—Four forms are recognized by this author, viz., endometritis catarrhalis chronica purulenta atrophicans cystica, endometritis chronica purulenta hyperplastica glandularis, endometritis chronica purulenta erosiva ulcerosa, and endometritis chronica purulenta interstitialis. The predominating organism was found to be a streptococcus.

EXPERIMENTS on the inhalation of tubercle bacilli with cats, P. Chaussé (Compt. Rend. Soc. Biol. [Paris], 1910, Vol. 69, No. 32, pp. 380–382; Centbl. Bakt. [etc.] 1. Abt., Ref., 1911, Vol. 49, No. 15-16, p. 463).—It is possible with minimum amounts of tuberculous material (bovine type) to produce tuberculosis in the cat by inhalation. The infection was found to be proportional to the amount of powdered material inhaled. After a time of fifteen to twenty days tubercles were macroscopically visible in the lungs.

HERPES tonsurans in bovines, by Hertel (München. Tierärztl. Wchnschr., 1911, Vol. 55, No. 6, p. 89).—This disease was noted in four barns. The treatment consisted of thoroughly cleaning the white gray areas of the skin with soft soap and an application twice daily of a ten percent alcoholic solution of salicylic acid or tincture of iodine.

In six weeks a complete cure was effected. In one case the disease affected a man also (barn hand).

LUXATION of the atlas in a horse, by Pschorr (München. Tierärztl. Wchnschr., 1911, Vol. 55, No. 5, p. 70).—The symptoms at first noted were a protruding head and neck. On being taken into the barn a high degree of colic set in, which was accompanied by active movements of the limbs.

Attempts to give the animal a colic drench revealed the fact that it could not lift its head. On examination it was noted that a very painful swollen area about one to two handbreadths in size existed behind the left ear, which was diagnosed as a luxation of the atlas. The diagnosis was confirmed after destroying the animal.

ANAPHYLAXIS and lymph formation, by M. Calvary (München. Med. Wchnschr., 1911, Vol. 58, No. 13, pp. 670–672).—Dogs which were pretreated with horse serum after a period of two weeks had a decided increase in their lymph content, and which did not coagulate. The first injection of a foreign serum, or the reinjection of a heterologous serum, was found to be without influence.

Barium chlorid and calcium chlorid had no retarding effect upon the advent of this condition.

TECHNIQUE of umbilical disinfection for calves, by Frank (Mitt. Ver. Bad. Tierärzte, 1911, No. 1; München. Tierärztl. Wchnschr., 1911, Vol. 55, No. 3, p. 45).—The calf is thrown upon its back and the sheath of the umbilical cord filled with the disinfecting fluid, where it is allowed to remain for a few seconds. After this the umbilical cord is disinfected externally.

If the umbilical cord has been torn at its abdominal juncture, the skin is pulled upward and the disinfecting fluid placed in the cup-shaped orifice thus formed.

RHINITIS in bovines, by Haag (München. Tierärztl. Wchnschr., 1911, Vol. 55, No. 4, pp. 53, 54).—The author was able to note a primary nasal catarrh in three cows, which is considered a rare finding. In two of the animals the catarrh was unilateral and in the third bilateral. The nasal secretion consisted of fibrin-like strands which at times assumed a length of one-half meter (19.68 inches). The nasal sounds could be heard for a considerable distance.

The treatment instituted consisted of a nasal irrigation with a one percent boric acid and alum solution given twice daily, and inhalations of turpentine and creolin. German cathartic salt (Carlsbad salts) and ammonium muriate in honey were given internally. Recovery set in only after four weeks time.

THE accustomation of animals to ammonia gas. Is this anatomically explainable? By E. Seifert (Arch. Hyg., Vol. 74, No. 2–3, p. 61).—It was noted that animals when kept in a respiration apparatus and exposed to constant amounts of ammonia gas could acquire a tolerance to about two to four times the amount which is usually set down as the maximum. [This is of considerable importance in stable hygiene and to animals kept by ice plants, breweries, and cold storage houses.]

Anatomical changes to explain this could not be detected.

TRAUMATIC lesions of the udder and multiple streaming (In Berlin. Tierärztl. Wchnschr., 1910, Vol. 26, No. 49, p. 976).—In five to thirty percent of all the cases in which the condition was due to yellow galt the udder became useless. The milk was delivered in two or three streams.

Recent Publications

Diseases of the Hog. By A. T. Peters (second edition). Bulletin No. 2 of the State Board of Live Stock Commissioners, Springfield, Illinois. This bulletin for lay readers deals briefly with all of the commoner diseases of hogs and some diseases that are not so very common. Considering the meagreness of literature on diseases of the hog, this bulletin will prove a very acceptable one to most veterinarians. The symptoms, prevention and treatment for each disease are given.

Hog Cholera and Serum Vaccination. By A. T. Peters. Bulletin No. 1, State Board of Live Stock Commissioners, Springfield, Illinois. This bulletin like the preceding one is for lay readers. It goes quite fully into the symptoms and post-mortem appearances of hog cholera and gives in detail the method for producing and administering antihog-cholera serum. The bulletin contains several full-page plates illustrating the subjects treated and the equipment of the laboratory at Springfield.

Common Diseases of Sheep. Bulletin No. 4, State Board of Live Stock Commissioners, Springfield, Illinois. This is a fifty-page bulletin well illustrated and gives in some detail the symptoms and treatment of the common diseases of sheep. Illustrations are given of sheep, poisonous weeds, and of the common parasites. Though intended for lay readers, much of interest and value to veterinarians is contained in this bulletin.

FOR SALE.—An Iowa practice. Established six years, receipts increased from $2,000 for the first year, to $3,000 for 1911. Good reason for selling. Address Dr. E. A. Richardson, Box 28, Goldfield, Iowa.

WANTED—Some subscriber to furnish me the formula for Sloan's Liniment. Address care of VETERINARY MEDICINE.

FOR SALE.—Veterinary practice, hospital and residence. Part cash, rest easy payments if desired. Cheap if taken at once. Address Dr. A. Culverwell, Concordia, Kansas.

POSITION WANTED—By a 1912 graduate with a veterinarian. Have had experience in practice. Can begin April 15th. Address No. 1, care of VETERINARY MEDICINE.

WANTED—By a sober, neat, industrious young man who will graduate in the spring from an accredited school, a position as assistant to a veterinarian. Address No. 2, care of VETERINARY MEDICINE.

WANTED—By a graduate of the Ohio State University a position as assistant to a good practitioner. I have a license to practise in Ohio. Address No. 3, care of VETERINARY MEDICINE.

FOR SALE—In a South Dakota city, a veterinary practice, together with property as follows: lot 100 x 150 feet, 5-room cottage, cement-block veterinary hospital 32 x 40 feet, with stall room for 13 patients and an operating room 16 x 24 feet fitted with a good table and other appliances. In a good farming section, farm land worth up to $165 per acre, well stocked with fine cattle and horses. Successor will probably be appointed Deputy State Veterinarian. Price $3,500. $1,000 cash, balance in small payments. Will stay to introduce purchaser. Am compelled to sell. The property is a bargain at this price. Address No. 5, care of VETERINARY MEDICINE.

Pointed Opinions on Live Topics

BY READERS OF

Veterinary Medicine

It is in reports like those of this department that the current history of the progress of veterinary science is written. Are you leaving a record of your experience which will help others, as you have been aided by these and other clinical reports? If not, you are earnestly invited to contribute from your experience that this department may be of the greatest service to its readers. By so doing you will earn the thanks of the editor, the approval of the veterinary profession and the lasting gratitude of those who are aided by your suggestions.

The Carabao

Here are three pictures of Philippine draught animals. It may be possible that some of the readers of THE AMERICAN JOURNAL OF VETERINARY MEDICINE have never had an opportunity of seeing the carabao.

This is the animal that is so susceptible to rinderpest, yet will harbor the trypanosome of surra without any apparent ill effect.

W. R. L. BEST.
Veterinarian Bureau of Agriculture.
Bayombong, Nueva Vizcaya.

Native Carabaos, Philippine Islands

Preparing the ground for rice

Forage Poisoning?

A four-year-old cow was noticed to be acting very queerly. She had been in a stalk field. She would stretch out her head, loll her tongue, slobber, bellow and run for a few rods shaking her head. Then she would stand quietly and act as if in a stupor. Soon the eyelids and vulva were noticed to swell. In the evening her eyelids had swelled to such an extent that the eyes were shut tight, and the owner stated that her

Country Transportation, Philippines

ears and the upper front part of her legs took on a hard swelling. Oil and stimulants were prescribed. After she commenced to physic she began to improve. Saw her nine days later and her eyelids were nearly normal—a sticky pus gathered on her lids. When walking she would shake her head at intervals. Epithelium coming off in patches on teats. Her nostrils had a ring of dried discharge around them. The owner stated her anus had also been swelled, and that the mucous membrane of cheeks had swelled so that they literally hung out of her mouth.

She is now convalescing. Has some one had a similar case with better results of treatment?

L. N. PETERSON.

Collum, Ill.

Rapidly Advancing Prices

Opium has advanced $2.00 per pound within a month and the price today is about twice the price of a year or two ago.

Golden seal has advanced $3.50 per pound during the season and it is scarce at $6.00 per pound in large quantities. Only a few years ago it sold at 25 cents a pound.

Morphine, codeine and other alkaloids of opium have advanced with the advance in opium.

Buchu costs about 8 times as much as it did two years ago, having advanced from 15 cents to $1.25 per pound, by the bale.

Ergot costs three times as much as it did a year ago.

Powdered asafetida is selling around $3.00 per pound in the wholesale market when it can be obtained at all; 25 cents was the ruling price not more than three years ago.

Glycerine is 50 percent higher than a year or more ago.

We might name a great many other advances but these will suffice to show the tendency of the market.

There are only two possible results of this enormous advance in crude materials. One, a proportionate advance in prices of pharmaceutical preparations, the other a reduction in the quantity or quality of the preparations containing these drugs.

Manufacturers of reliable preparations are advancing their prices which the advance in drugs and chemicals justifies, and physicians will be obliged to pay more than they have been paying in the past. It is unfortunate but something for which

the manufacturer is not to blame.—*Physicians' Drug News.*

Not Recommended for Hog Cholera

I should like to ask the readers of VETERINARY MEDICINE what they know about the DeVaugh Hog Cholera Vaccine, also the Bruschettini Hog Cholera Vaccine; would also like the editor's opinion.

H. FAIRFIELD, D. V. M.

Chalmers, Ind.

[We know of no veterinarian who places any reliance in the former. The Bruschettini Hog Cholera Vaccine has been investigated and pronounced valueless by the Bureau of Animal Industry of the United States Department of Agriculture. Our personal experience with it would indicate that the B. A. I. was not far wrong.—ED.]

Formula for Black Oil

Linseed oil (raw).....pt. 1
Turpentine.....ozs. 2
Oil vitriol.....drs. 6

Leave the bottle without the stopper until the heat evolved by the admixture of the acid has passed away.

A. H. IDE.

Lowville, N. Y.

Treatment of Fistulous Withers

A fistula of the withers may result from many and various causes, important among which are heavy contusions and collar injuries with consequent introduction into the tissues of infective material. Several cases occurring upon the same farm at or near the same time, are usually found to be the result of a common cause. In order to protect those not affected and to convince the owners of animals so affected that the malady is not communicable by association or contact, it becomes necessary to find the cause and remove it.

Within a few days after the occurrence of such an injury there is a marked swelling which usually causes the subject pain when palpated. The nature of the causative agent and the duration of the disease are responsible for a wide variation in the pathological conditions found in these cases, hence symptoms differ quite materially. Necrosis of bone to any damaging extent is quite rare except in cases of long standing or where practitioners pack the fistulous tracts with corrosive agents. (I consider the use of corrosive agents in any case of fistulous withers harmful.)

Fifty to sixty percent of all cases of fistulous withers will permanently cease suppurating in from one to three years when unmolested. Having observed this, some veterinarians are unscrupulous enough to treat (?) cases for two or three years, seeing them as seldom as possible, doing as little as possible, and eventually collecting a fee as though skilled service had been rendered.

Complete recovery in fistulous withers consists in regeneration of all tissues destroyed, with union of the skin so perfect that it is necessary to part the hair to find a cicatrix. Of course this is only possible in favorable cases which are treated early, and in which recovery is prompt. Half the battle in the successful treatment of these cases consists in early estab-

lishing surgically, good drainage.

Before operating, the subject should be given an anodyne in a quantity sufficient to perceptibly dull sensibility. The patient is now ready to be confined and I prefer the stanchion with the subject retained in the standing position. All hair should be shaved or clipped from the field of operation, and since the majority of cases require drainage anterior to the scapulæ, the field is quite large.

When all is in readiness an exploratory incision is made at or near the median line and counter openings are made where necessary. Skin incisions are never made longer than three inches, as unsightly scars are not easily avoided where this precaution is disregarded. All tissues between the exploratory incision and counter openings are divided subcutaneously. Fibrous tissue is removed with heavy dissecting shears made for the purpose.

When much hemorrhage results, if it is impossible to ligate vessels, the entire cavity is packed with gauze. The gauze is removed in from three to twelve hours and no trouble comes from this source.

The most important considerations in connection with the aftercare are to prevent the subject from rubbing or otherwise bruising or irritating the parts and to avoid frequent irrigations. If drainage is perfect, frequent irrigation is unnecessary after blood clots are removed, and often gently swabbing the wound with dry absorbent cotton is all that is necessary. The frequent introduction into the wound of strong antiseptic solutions certainly retards the reconstructive process.

Very little suppuration should follow the operation, and the presence of much pus discharging from any opening is proof positive that drainage was not properly provided for or that it has since been obstructed. Some cases are prone to develop a fibroid tissue which is quite troublesome and needs to be frequently removed that drainage may not be hindered.

During the later stages of healing it is necessary to separate the margins of the skin from underlying tissues surrounding all incisions to prevent puckering and subsequent blemishes.

The careful use of bacterins in these cases is of great value in that it materially shortens the course of all cases treated.

[Through an inexcusable error we lost the name of the writer of the foregoing. If he will supply us with the information proper credit will be given next month.—ED.]

Adrenalin Chloride in Colic

Much has already been written upon the therapeutic value of adrenalin chloride. Some of the praises perhaps have been to advertise the article and much of it has been due to its merits—to the good results it has actually given in the hands of many veterinarians.

Many educated and experienced professional men place great stress

upon its value in that dreaded and often fatal disease azoturia, others assert it as worthless as water. I have used adrenalin in azoturia with some good results, I think, but there are conditions where its use is contraindicated.

If, in a case of azoturia, we have a low blood pressure, its use is strongly indicated, but it should be withheld where the blood pressure is high.

I wish to state two cases of colic wherein I used adrenalin chloride with seemingly good results, though you may not be able to give any credit to its use in these cases.

Case 1.—A large black horse, 12 years old. I was called and found him with what Dr. Law terms acute croupous enteritis, that is, the trouble seemed to be in the rectum principally. The walls of that portion of the bowel had thickened till its lumen was almost occluded. The mucous membrane was congested and dry. The pains were acute and continuous. Pulse, respiration and temperature bad; the pupils were dilated and some tympany existed. I gave a drench to lessen the tympany and administered aloes and nux vomica; and also some cannabis to quiet the pain. The patient seemed to grow worse and arecoline was given with no results. Peristalsis was in abeyance. A rectal examination, though painful, was made to ascertain if inguinal hernia existed. Results negative.

After five hours' treatment I felt that I had exhausted my resources and again warned the owner of the prognosis and impending death. I had a bottle of adrenalin chloride in my case, and knowing its value for inflamed mucous membrane I immediately diluted one dram with one ounce of water and injected it into the rectum and retained it by pressure.

Presently I noticed the pulse was better, respiration easier and the pupils slowly contracting. In half an hour I repeated the injection and in another hour the rectum was ballooned, some flatus escaped, peristalsis began, and to my surprise this horse made a good recovery.

Case 2.—A large five-year-old horse that had been afflicted with paraplegia and was successfully treated and kept in a sling. During convalescence and while yet in the sling he had a severe attack of colic. I was called and found the pulse, temperature, respiration in very bad condition, pupils widely dilated; seemingly some tympany, pains acute and continuous. Visible mucous membrane very pale. Peristalsis wanting. My diagnosis seemingly also wanting but prognosis was unfavorable.

A rectal examination showed the cecum, the pelvic flexure of the double colon and floating colon in position but no tympany; bladder normal. The coats of the bowels were enormously thickened which gave the appearance of bloat. A tumor (hard) nearly the size of my fist was firmly attached to the sublumbar muscles and so close to the posterior aorta that it obstructed fully half the diameter of that organ. (This tumor cannot be mistaken for a misplaced or floating kidney.) Embolism seemed to be the only

diagnosis, with probably some gastric tympany.

As a forlorn hope I proceeded to give medicine to counteract any gastric tympany that might be present, and gave aloes and nux, also gave some cannabis to lessen the acute pains. I gave rectal injections and soon followed with arecoline, the latter giving no results.

In three hours arecoline again was given but still no action from it. The thought of adrenalin chloride came to my mind and I proceeded to use it as in case No. 1, and there followed the same gratifying results, viz.: better blood pressure, easier respiration, pulse strengthening, pupils contracting, color to the mucous membranes and ballooning of the rectum with some slight peristalsis and flatus.

I came away leaving cannabis, nux and a little tincture cantharides to be given on the tongue every hour. The next morning patient was eating hay and made a good recovery.

At least I shall waste a little adrenalin on similar cases.

E. E. HOBBS, V. S.

Holton, Kan.

Tuberculosis Sunday Observed in Lawrence

The good work being done by the Anti-Tuberculosis league in this city and by similar leagues all over the country was the subject of favorable comment in many of Lawrence churches yesterday, Tuberculosis Sunday being observed. At Y. M. C. A. Dr. Winchester delivered a very interesting, most instructive and encouraging address on the nature of the disease and the modern methods that are conquering it.

In part his address was as follows:

"The reason why this day and week has been designated by the National association for the study and prevention of tuberculosis as Tuberculosis Sunday and Week, is to aid the movement for the conservation of human life. The interest in this work is so universal that throughout the United States it is generally observed. The first appeal by the association was made last year, which was successful, and it is endorsed by all the churches. The warfare is simple, rational living and cleanliness.

"Tuberculosis is a disease process caused by the growth in the body of tubercle bacillus or germ.

"The germ is a vegetable parasite, rod-shaped, approximately 1-10000 of an inch long, and 1-1000000 of an inch wide. The germ in growth destroys tissues and produces poisons or toxins which cause the well known symptoms of the disease.

"The cause of tuberculosis was made known in 1882 by Dr. Koch of Germany, and at that time he stated the organism in man and the cow were identical.

"The first official notice of the existence of tuberculosis in cattle in Massachusetts was in November, 1886, which was soon followed by a minority report of the Massachusetts Cattle commission, stating the fact that from an examination of 886 bovines in 34 farms 28 percent were proven tubercular by a post mortem examination.

"In 1890 the Cattle commission in its report began its comment as follows: 'Tuberculosis is a word that is not found even in the latest edition of Webster's Unabridged Dictionary.' The writer of this was the editor of the New England Farmer.

"The legislature in 1892 recognized it as a contagious disease of animals. The attorney general was asked in 1895 to give his opinion on a bill submitted to him, and without quoting in full, the following is of interest: 'It may well be assumed that a carcass which is infected or an animal which is infected with tuberculosis has practically no value for meat or milk purposes.'

"The commonwealth appropriated, from 1894 to 1899. about $800,000 for the eradication of tuberculosis in cattle.

"The records of the commission show that in 1900 the opinion of the chairman was that the danger to public health from diseased animals was overestimated.

"The dairy cow is the source of the most important of all human food; remove her, and unless a substitute is

found, many young children will die of starvation, which practically makes them parasites of the cow; in fact, she has become a foster mother to four-fifths of the human race.

"Having passed the period during which milk is a requisite article of food most persons continue its use as a beverage, and add butter to their diet as a second product from the cow, cream and cheese soon become current articles of food to the end of life. This being a fact, it is important to make a careful inquiry regarding the transmissibility to ourselves, through the use of dairy products, of the commonest disease with which dairy cows are affected. This inquiry is emphasized by the knowledge that the commonest and most important disease of cows is also the commonest and most important disease of mankind, and by the fact that, though the disease in question, tuberculosis, is one of the few infectious diseases to which widely different species of animals are susceptible, its commonest victims are human beings and dairy cows.

"In our fight for the suppression and eventual eradication of tuberculosis, we must strive to control and make harmless all the sources from which tubercle bacilli are scattered. The two most important sources of tubercle bacilli, against which public health must seek to defend itself, are tuberculous persons and tuberculous dairy cows. Of these two sources, the former is the more important.

"When we actually realize the truth about tuberculosis, and the number of victims that it claims, we are in a better state of mind to join in this work. During 1908, according to the most reliable figures, 160,000 human lives were prematurely ended by tuberculosis in the United States alone, and this number does not include the deaths hastened by tuberculosis, chargeable to other immediate causes. Every one of these deaths was due to the tubercle bacilli that had its origin within, and was expelled from the bodies of tuberculous persons and animals.

"The cost of tuberculosis is four-fold; cost in lives, cost in disability, cost in happiness, and cost in money. There are always one to two million people in the United States being rendered miserable through illness from tuberculosis in the family circle, and as many more mourning the loss of friends.

"Of those now living in the United States, the number who will die of tuberculosis if the present rate of mortality continues, is about 10,000,000. Tuberculosis causes one in every nine deaths. The percentage of deaths from tuberculosis of the lungs is greatest in the working periods of life, the maximum percent being between the ages of 20 and 30, when one-third of all deaths are from this cause, the average age at death from tuberculosis for males, 37.6 years, for females, 33.4 years, cutting life short on the average 29.4 years for males and 34.5 years for females. On the average, each death from tuberculosis is preceded by a period of total disability of one year, and six months, which is preceded by a period of partial disability of one year and seven months.

"The first official notice sent to the physicians of Lawrence was February 19, 1906.

"In 1909 there were 154 deaths in this city from tuberculosis, or 19.25 to 10,000. In 1910 there were 123 deaths in this city, or 14.32 to 10,000.

"The law relative to this disease is that all cases of tuberculosis must be reported to the board of health by the attending physician. You will remember that it is noted that about one-third of the deaths occur during the working period of life, and that the minimum cost of those cases was $8000. Here in Lawrence that means a monetary loss to this city of about $400,000.

"Although these figures may strike the popular imagination they have little significance; in fact money estimates in this field, even when made on the per capita basis, are of little value, except as emphasizing the overwhelming importance of human vitality compared with those interests which are usually measured in money. It is impossible, in any true sense, to measure human life in terms of dollars and cents.

"The measure of life may perhaps be found in happiness or the satisfaction enjoyed between birth and death, less the dissatisfaction. A life of happiness is always worth living, and a life of usefulness which brings happiness to others, is doubly worth living. The most fundamental condition of all is health, in spite of exceptional cases, in which unhealthy are found happy, and healthy people unhappy.

"As you all know, the city has completed a municipal hospital for the care of advanced cases, and which will accommodate 100 patients, the appropriation of $40,000 having been made for this purpose. This means practically that that number of centers of infection

will be properly taken care of and will cease to be a menace to the community.

"There have been 80 patients admitted to the tuberculosis municipal hospital, and 20 have been discharged as cured, or convalescent.

"You must draw a line between the advanced case and the incipient case. The latter is not dangerous or a menace to his neighbor, from the fact that his disease must have open lesions or sores from which the germ is expelled. These incipient cases are the ones that get well, provided the sufferers follow instructions. Recognizing these facts, there was organized in the fall of 1907, the Lawrence Anti-Tuberculosis league, and it has accomplished a great deal of good. This hospital largely owes its building to the efforts of that league, the members appearing before our city government asking for the same. It has been endeavoring to educate and interest not only the victims, but all in this work, and it is universal.

"At the recent International congress on tuberculosis, one delegate reported an experiment in England which has not yet appeared in print. In Liverpool the local government board tried the experiment of using pasteurized milk. The amount of illness and death in that city from children's tuberculosis is very great. Yet, among 1800 children who were given pasteurized milk and who were carefully watched every week, not a single case of tuberculosis developed, which seems to prove conclusively that children's tuberculosis is entirely preventable by the use of pure or pasteurized milk. This is interesting, though at variance with former opinions regarding bovine tuberculosis in children.

"Prof. Fisher, under the head of promulgation of life, writes: 'When the public makes up its mind no longer to endure impure milk, impure water and impure air, and unreasonable dangers to life and limb, life will lengthen eight years and probably a great deal more.'

"In closing these few remarks I would be remiss in my work if I did not call special attention to the common house fly. It has been said that the fly is a menace to the home, which is true; but the fly would not be in evidence if sanitation were proper. Thus it is evident that the fly acts as a dectective of unsanitary conditions.

"Bear in mind that in order to become diseased with consumption the seed or bacillus of Koch must be introduced into the system, and the system or body must be a fit soil or in condition for its propagation."—*Lawrence* (Mass.) *Telegram.*

[The Dr. Winchester referred to above is Dr. John F., well known to most veterinarians and president of the A. V. M. A. in 1901–2.—Ed.]

State Veterinarian Retires From Office

Dr. D. F. Luckey, for twelve years state veterinarian of Missouri, will retire from office January 15th. He will enter practice at Paris, Missouri, and look after his agricultural interests there.

Doctor Luckey has devoted much of his time in recent years to ridding the state of tubercular cattle. He chiefly was responsible for the law compelling tuberculin testing of milk cows and he has framed many of the model ordinances relating to the sale of milk in the small towns.—*Kansas City Times.*

Tuberculin Test Not a Mechanical One

MR. PRESIDENT:—In connection with the question of tuberculin testing, a great deal is being said to-day about pasteurization. I want to say that I am not a believer in pasteurization, as it is being carried out in the average plant to-day; and from what investigations I have made along this line, I call it a fake, and very unreliable, I feel like quoting to this body an expression that I often have used in talking to dairymen, namely, "I would as soon swallow a menagerie as a cemetery," and that is about what it means. I believe that there are none in this room after this discussion that are even skeptical enough to believe that the tuberculin test is so simple that it does not require the most expert diagnostician to insure accurate results. Should one man go away from here with that

impression, I would not think much of his capacity for education.

Last year we had men here advocating that satisfactory tests could be made by students. I see none of those gentlemen here to-day, and I hear nothing of their remarks. They evidently have begun to realize that the question of tuberculin testing is not a mechanical matter, but requires the knowledge of an expert.

New York has been getting a good deal of credit and a good deal of criticism. I want to say that I discovered in New York ideas which I have been carrying in my mind for some time, (it is being worked out there) that is the question of elimination of tuberculosis in districts. I found near Homer, New York, a man by the name of Charles J. North, who is supplying a certain district in New York City with milk. He first started out with the idea of supplying only milk produced by his own cows, but his product was so good that he was obliged to call in help from outside sources. He began with the idea of paying a premium for tuberculin tested milk, paying one cent a quart premium for milk with a low bacterial count and from tuberculin tested cows. He says that to-day in his locality he can get more milk than he can use. People are anxious to furnish it when they see the difference in the amount of their checks at the end of the month, coming into their pockets, and they are perfectly willing to test, you do not have to use any force.—DR. G. ED. LEECH, in a discussion at the United States Live Stock Sanitary Association, Chicago, 1911

Child Dies of Rabies

Verita Hare, three years old, died at her parents' home, 1805 West Jackson boulevard, yesterday of rabies. She and her baby brother, Orrel, one year old, were bitten December 7th by a bulldog, owned by Otto Gross, who lives in the same building. Gross was also bitten but suffered no ill effects. The dog died of rabies two days later.—*Chicago Examiner.*

"Staggers" in Virginia

At least 75 horses have died near Harrisonburg during the past month from eating moldy corn. The farmers are greatly exercised over the matter and veterinarians are kept busy. A few cases have been cured, but the doctors say that 90 percent of the afflicted animals die. Newspapers are urging the farmers to shell the corn before feeding, and to use other precautions. It is said that the unprecedented drought of last summer and fall stunted the corn causing the formation of a deadly poison in the stalk and cob. This is the first time that the disease has ever appeared in this part of the country.

Some of the animals suffer a complete paralysis with an attendant sleepiness, which brings on death in a few hours. Others become wild and raving, attacking other animals and often human beings, and soon die in fearful paroxysms of pain.

Deaths are occurring daily in Rockingham and many animals are sick. Page county has been hard hit, as has been Augusta. Shenandoah has had a few deaths.—*Roanoke* (Va.) *World.*

X-Ray Shows That Hens Wouldn't Lay

Dr. Curran, veterinary surgeon, has found a new and novel use for the x-ray machine.

A gentleman stepped into his office about three weeks ago, and asked if there was any way in which he could positively tell if his 300 hens were going to lay this winter or not. The gentleman no sooner had the last word word out of his mouth when the doctor replied, "Yes, we will turn the x-ray machine on them." The hens were carefully

examined with the fluoroscope, and about forty were placed in a pen by themselves, as non-layers, several were found that would start laying in from one to three days, others in from one to three weeks. To the surprise of the owner, the doctor's predictions came true. Several of the hens that the doctor said would not lay until spring, were killed, examined, and all found as he stated.

Dr. Curran has been in Cedar Rapids only one and a half years and has been found to be a progressive and up-to-date veterinarian.—Clipping from a Cedar Rapids Iowa paper.

Cholera Killing Horses

A disease similar to hog cholera has made its appearance in the vicinity of Skidmore and has caused the death of a large number of horses. It is said that practically every farmer in that locality has lost one or more horses.—*Kansas City* (Mo.) *Star*.

[This would be true if it were so.]

Twenty-Three Years Between The Shafts

Below is shown Dr. F. H. P. Edwards, of Iowa City, Iowa, his assistant and his 28-year-old gelding which Dr. Edwards has driven continuously in his practice since 1888, and which, as may be seen by the picture, still "looks as good as new."

During recent years the doctor relieves this horse somewhat with an automobile, but he has been unable to find any make with 25 percent of the lasting qualities that this horse has shown. Both Dr. Edwards and his horse are living proofs of the fact that proper care of man and beast pays the biggest kind of interest.

An Illustrious Class

No. 9 of Volume VI of *The Alumnus* of the Iowa State College is a special veterinary number. It contains a half-tone and a short biographical sketch of each of the faculty members of the veterinary department. The Alumni directory contains the names of a large number of prominent veterinarians. Members of the class of 1885, for instance, have had a large share

Dr. F. H. P. Edwards, assistant and place of business

in making the veterinary profession of America what it is today. There were but seven graduated in this class and more than half of them are veterinarians of national and international reputation. Three of the seven are now at the head of veterinary colleges, namely C. A. Carey of the Alabama Polytechnic Institute, G. H. Glover of the School of Veterinary Science at the Fort Collins Agricultural College, and S. Stewart, of the Kansas City Veterinary College. Two of the seven, Drs. Stewart and Glover, are former presidents of the American Veterinary Medical Association, and another, Dr. W. B. Niles, is famous for his studies in hog cholera. Of the two remaining members one, Dr. D. E. Collins, is inspector-in-charge of the Bureau of Animal Industry at Marshalltown, Iowa, and the other, Dr. E. E. Sayers of Algona, Iowa, is one of the most successful practitioners in his state.

Our Horse Census

A report just issued by the census bureau presents remarkable figures in connection with the increase in the number and value of horses, mules, asses and burros in the country.

Especially interesting is the showing concerning horses. In 1900 18,267,020 horses and colts were reported. Ten years later the number was 19,731,000, an increase of 1,463,980.

So, in spite of the immense growth in the number of automobiles, we had an increase of nearly a million and a half in the number of horses and colts.

But the most remarkable feature in this part of the report is the increase in the value of the animals. In 1900 the value of all the horses and colts was $896,513,217; in 1910 it was $2,076,297,828, an increase of $1,179,784,611!

The observer of the passing show on Michigan boulevard, Chicago, especially during the "rush hours" of the automobilists, would seem to be justified in the conclusion that the day of special demand for horses must have passed.

Such conclusion would appear to be strengthened, if not confirmed, by the enormous figures showing the increase in the automobile manufacturing business.

And yet, army officials find it next to impossible to secure anything like a sufficient supply of horses for cavalry and artillery.

The automobile and the electric car have put unnumbered horses out of business. Still the demand for the animals is so great as to furnish large profits for breeders.

Intestinal Occlusion in A Dog

Here is an account of a rather interesting case I had last Sunday night. I think it goes to show that too much care cannot be exercised in examining a patient when called to treat one.

I was called at 12:30 a. m. to a case which the owner in consultation with a druggist had been treating for a couple of days with no beneficial result.

SUBJECT: A mongrel puppy eight months old.

HISTORY: He had been constipated for three or four days, making frequent but ineffectual efforts at defecation and had received four compound cathartic pills, one ounce of castor oil and one ounce syrup of buckhorn. All day Saturday he had shown great uneasiness and signs of colic and resented handling, crying with pain when attempting to move and unsteady in his gait.

Upon my arrival, the patient presented the following symptoms: Temperature 104.5° F., quickened

respiration, retching, pulse fast but weak. Manipulation of the abdomen was exceedingly painful, but revealed a sausage-shaped and hard swelling in the median line, just anterior to the pubes. The cecum was much distended with gas and very tender.

Owing to the resistance of the patient and the pain I administered three tablets H-M-C No. 1 hypodermically and after fifteen minutes a few whiffs of chloroform which produced profound anesthesia. I then made a rectal examination and discovered a hard slender body placed transversely across the rectum, about three inches from the anus, embedded in the fecal mass. After considerable patient manipulation I managed to dislodge this and bring it parallel to the long axis of the bowel and extract it with a pair of artery forceps. It proved to be a darning needle, much corroded and threaded with yarn which was all matted up in a hard fecal mass about the size of a walnut. The rest of the fecal mass was then removed by injections and manipulations per rectum and massage to the abdomen. The owner was instructed to limit the diet to milk and other liquids for a week and report.

The animal came out from under the anesthetic in about eight hours and has since shown no untoward symptoms; has recovered his usual spirits and appetite to the great relief of his owner who thinks a great deal of him. I may add that the vomition produced by the H-M-C was copious, the vomited matter being extremely offensive and mostly fecal.

C. J. SAUNDERS, V. S.
Lecturer Canine and Feline Diseases, Ontario Veterinary College.
Toronto, Ont.

Formula for "Smith Oil"

Regarding inquiry by Dr. Peterson on page 868 of December VETERINARY MEDICINE for Black Oily Liniment, used for wire cuts and other wounds. I believe this consists of sulphuric acid, turpentine and linseed oil. Among Germans this preparation is known as "Smith Oil." It is used extensively in certain parts of this state for wire cuts and wounds, and I have seen it used as a family remedy for burns, scalds, wounds and bruises. The following are the proportions: Turpentine and linseed oil, each one pint; tincture of aloes, eight ounces; nitric acid and sulphuric acid each four ounces For mixing use an earthenware or glass vessel, mix slowly and with great caution, and do not attempt to use until heat evolved has subsided. Some substitute olive oil for the linseed oil.

DR. P. I. KERSCHNER.
Dodge City, Kan.

Infectious Vaginitis

I am having a great deal of trouble treating what I call "infective Vaginitis," and if any of the readers can give me any information it will be appreciated.

SYMPTOMATOLOGY: In cows the mucous membrane of the vagina and the vulva becomes swollen, inflamed and very tender to the

touch, covered with small red vesicles about the size of a small pea. These seem to be filled with water and remain for months. In some urinating becomes difficult and there is a great deal of switching of the tail and uneasiness. This disease seems to be very persistent but does not seem to do the animal any great deal of harm.

TREATMENT: Nothing we have been able to do seems to be of much benefit and some of the breeders are getting very anxious about their animals. Any information will be greatly appreciated.

S. E. N., D. V. S.

——, Utah.

Glyco-Heroin for Laryngitis

This disease, which usually results from exposure to dampness or severe dry cold, and may be of an epizootic or enzootic nature, is a most common one among horses and dogs, and in no small percentage of cases it is sufficient to cause death.

In the first or acute stages there is always considerable congestion, followed by inflammation of the mucous lining of the bronchial tubes. The animal experiences much pain and coughs frequently. There is usually a harsh sound to the breathing and a high fever.

Pain attending the act of respiration tends to make the animal more or less nervous, and there is a consequent loss of strength. The appetite may also be lost either wholly or in part.

If the animal is immediately placed upon Glyco-Heroin (Smith) and comfortably quarrtered, elief will soon follow and the attack will be aborted or brought to an abrupt end.

When the disease has advanced to the second stage, the secretion from the bronchial mucous membranes becomes viscid, ropy and profuse—so much so, in fact, that breathing becomes exceedingly difficult and is always painful; the animal experiences rapid loss of strength and flesh.

In both acute and chronic bronchitis, Glyco-Heroin (Smith) produces miraculous results. The animal is relieved of cough, fever, difficult breathing, and nervousness; his sleep is made healthful, strength is preserved and appetite restored. Meanwhile the inflammation of the breathing-passages is subdued and healing of the affected parts begins.

Hundreds of instances of the use of Glyco-Heroin (Smith) in cases of this disease may be cited in proof of its wonderful curative properties. Nothing else so quickly relieves an irritating cough or painful respiration.

Antiperiostin for Spavin

"I have been using Antiperiostin for more than a year and always with satisfaction. In a case of acute arthritis (spavin) in my own driving mare, I had to lay her up for three weeks, but even then I used only one application. That was last July. Just when I was ready to give up, she commenced to improve and was soon going sound; it would take $1,000 to buy her today.

"I have also used this preparation in the treatment of both high and low ring bone, splints, and in a number of cases of both acute and chronic spavin, always with success."

TAMPA VETERINARY INFIRMARY.
Tampa, Fla.

Simply Fine

The card ledger is just simply fine. Suits me exactly.

A. J. KLINE.

Wauseon, O.

The Card Ledger O. K.

Enclosed find check, for which send me five hundred cards and two sets of guides, celluloid tipped. The ledger is O. K.

F. W. CULVER.

Longmont, Colo.

A New Serum Plant

EDITOR AMERICAN JOURNAL OF VETERINARY MEDICINE:

I take pleasure in announcing to you our engagement in the production of antihog-cholera serum, and to tell you why we are producing a highly potent and reliable serum.

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We are making no claims for our serum which its use will not fully substantiate. We have a reputation to build and maintain, and realize the fact that the only way to do so is to produce a first-class product.

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Kansas Meeting A Good One

Notwithstanding the extremely inclement weather, snow-blocked railroads and delayed trains, about seventy-five, or one-third of all the veterinarians in Kansas, gath-

ered in Manhattan for the annual state veterinary meeting December 27th, 28th and 29th.

The program was too short for a three-day meeting, but the interest was good in what program there was.

An instructive feature of the meeting was the clinic conducted by Dr. L. L. Conkey of the Veterinary Specialty Manufacturing Company of Grand Rapids, Michigan. The clinic consisted of a few operations, but mainly of a demonstration by Dr. Conkey of his *simplicity operating table* for horses, and his new canine operating table.

The "Simplicity" table is truly named, for there is little mechanism in its construction, yet it has all of the movements necessary to hold a patient in any position that can be secured with any operating table. Users of practically all veterinary operating tables were present at the clinic, but the "Simplicity" table received unstinted praise from everyone and was acknowledged to be the best equine operating table to be had. A number of the tables were purchased during the meeting.

The *canine operating table* was the same as the one exhibited at the A. V. M. A. meeting in Toronto last summer only in name, having been rebuilt and changed throughout as a result of many criticisms it received at the former meeting. It now has every movement and every convenience required for a table of this kind and is durable and not overly expensive.

It was interesting to note the opinions of the various users of tables as to the advisability of veterinarians owning and using operating tables. Without exception every veterinarian at the meeting who has an operating table maintained that it has been worth vastly more than its cost as a practice builder. Besides the better work and the large amount of it that the veterinarian can do because of having a table, it is the best and the cheapest advertising that he can secure, not only because of the publicity it brings, but because it actually increases the amount of practice done in the locality.

Dr. Conkey's method of chloroforming a horse was new to most of the veterinarians present, and in practice proved very rapid and as effective as any of the slower methods.

For this method of chloroforming, a sponge was saturated with

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water and then squeezed as dry as it conveniently could be with the hand. One nostril of the horse was thoroughly coated inside and out for some distance from the muzzle with vaseline and then the sponge was placed in the nostril and about one ounce of chloroform poured into it. Then by alternately holding the hand over the opposite nostril and releasing it the horse is compelled to inhale through the sponge and allowed to exhale through the open nostril. Chloroform was added to the sponge from time to time as appeared necessary. As soon as profound anesthesia was reached the open nostril was left free and the animal of course carried on the greater part of its respiration through this nostril. Apparently the amount of chloroform received from the sponge in this way was just about sufficient to maintain the anesthesia.

When the operation was completed the sponge was removed from the nostril and recovery was exceedingly rapid. Dr. Conkey has used this method in some hundreds of cases with an exceedingly low percentage of mortality.

A skillful operation that attracted much attention at this clinic was the spaying of a number of heifers by Dr. W. H. Richards, of Emporia.

The Doctor made his incision for this operation very low in the flank, in fact but little above a position opposite the patella when the animal is standing, and inserted only one or two fingers into the abdomen, removing both ovaries from the one incision. No suturing of this very small incision or after treatment is required.

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